

Mineral Industry Surveys

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BISMUTH IN THE SECOND QUARTER 2002

Total bismuth consumption in the United States was 564 metric tons (t) during the second quarter of 2002, an increase of more than 3% compared with the first quarter.

Compared with the previous quarter, consumption of bismuth in the second quarter increased 3% for chemical and pharmaceutical uses, increased 4% for alloying uses, and increased 1% for uses as a metallurgical additive. Total consumption in the second quarter increased 4% when compared to that of the second quarter of 2001.

The New York dealer price for bismuth as published in Platts Metals Week began the quarter at \$3.45 per pound. The price declined steadily to \$3.30 at the end of the quarter.

Chinese prices remained stable at \$2.75 per pound during the quarter. China accounts for approximately 50% of global mine production of bismuth, which totaled 5,800 t in 2001. Industrias Peñoles (Mexico) had additional quantities of bismuth available, and the flood at its Bismark Mine in the northern State of Chihuahua was unlikely to interrupt future bismuth supplies. Peruvian producers also were offering surplus bismuth for sale (Mining Journal, 2002a).

Teck Cominco Ltd.'s temporary closure of its Trail smelter will only take 40 t of bismuth out of the market in 2002. The closure means that one less medium-sized bismuth producer is holding surplus material. Moreover, neither Industrias Peñoles nor the Peruvian producers are understood to have significant

stocks of bismuth (Mining Journal, 2002b).

Through research and development efforts in industry, academia, and government agencies, several promising lead-free solders were identified to replace lead-containing solders in microelectronic applications. One of the leading candidates was a tin-bismuth-silver solder. It is recommended for soldering applications such as surface-mount technology as well as ball grid arrays (Journal of Metals, 2002).

Update:

The New York dealer price for bismuth was \$3.20 per pound in early September. This price showed some stability during August—after a year of falling prices—but significant price increases still seem unlikely in 2002. Preliminary data indicate that U.S. imports totaled 257 t for April and May of 2002, compared with 364 t in the first quarter.

References Cited

- Journal of Metals, 2002, Developments in lead-free solders and soldering technology: Journal of Metals, v. 54, no. 6, p. 25.
Mining Journal, 2002a, Minor metals in April: Mining Journal, v. 338, no. 8683, May 3, p. 325.
Mining Journal, 2002b, Minor metals in June: Mining Journal, v. 338, no. 8691, June 2, p. 481.

TABLE 1
SALIENT BISMUTH STATISTICS 1/

(Kilograms, unless otherwise specified)

	2001	2002		
		First quarter	Second quarter e/	Year to date
Consumption	2,200,000	546,000	564,000	1,110,000
Exports 2/	541,000	44,700	NA	NA
Imports for consumption	2,220,000	364,000	NA	NA
Price per pound, dealer, end of period	\$3.43	\$3.20	\$3.30	XX
Stocks, end of period, consumer	95,200	88,800	97,000	XX

e/ Estimated. NA Not available. XX Not applicable.

1/ Data are rounded to no more than three significant digits.

2/ Comprises bismuth metal and the bismuth content of alloys and waste and scrap.

TABLE 2
BISMUTH METAL CONSUMED IN THE UNITED STATES, BY USE 1/

(Metric tons)

Use	2001	2002	
		First quarter	Second quarter e/
Chemicals 2/	805,000	199,000	206,000
Bismuth alloys	981,000	241,000	250,000
Metallurgical additives	369,000	94,800	96,000
Other	45,000	11,000	11,500
Total	2,200,000	546,000	564,000

e/ Estimated.

1/ Data are rounded to no more than three significant digits, may not add to totals shown.

2/ Includes industrial and laboratory chemicals, cosmetics, and pharmaceuticals.

TABLE 3
U.S. IMPORTS FOR CONSUMPTION OF BISMUTH METAL, BY COUNTRY 1/

(Kilograms)

Country	2001	2002 2/				
		March	First quarter	April	May	January-May
Bahamas, The	--	390	390	--	--	390
Belgium	728,000	37,100	126,000	16,000	55,600	197,000
Canada	42,500	3,850	6,850	2,290	900	10,000
China	501,000	1,180	45,800	2,060	47,900	95,700
Denmark	52	--	--	--	--	--
France	2,820	--	--	--	--	--
Germany	57,800	601	743	40	52	835
Hong Kong	--	--	19,800	--	--	19,800
Italy	506	--	--	--	--	--
Japan	6,950	--	1,340	198	292	1,830
Mexico	605,000	37,300	116,000	36,000	54,000	206,000
Netherlands	1,160	--	--	--	--	--
Peru	--	--	--	19,500	--	19,500
Spain	34,000	--	--	--	--	--
United Kingdom	241,000	33,600	47,300	--	21,800	69,200
Total	2,220,000	114,000	364,000	76,100	181,000	621,000

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ June data were not available at the time of publication.

Source: U.S. Census Bureau.

TABLE 4
U.S. EXPORTS OF BISMUTH METAL, ALLOYS, AND WASTE AND SCRAP, BY COUNTRY 1/

(Kilograms, metal content)

Country	2001	2002 2/				
		March	First quarter	April	May	January-May
Australia	306	--	--	--	--	--
Belgium	194,000	759	759	--	--	759
Canada	89,700	29	13,100	3,330	4,580	21,000
China	11,100	1,440	1,440	--	--	1,440
Dominican Republic	2,380	--	157	--	1	158
Germany	90,300	--	6	--	--	6
Hong Kong	101	19	73	58	39	170
Israel	1,000	39	39	--	--	39
Japan	--	--	66	--	--	66
Mexico	91,100	10,000	21,700	2,000	2,120	25,900
Netherlands	36,600	4,760	5,190	798	--	5,990
Peru	872	2,000	2,000	2,000	--	4,000
Philippines	2,070	--	--	--	--	--
Russia	4,760	--	--	--	--	--
Singapore	260	--	150	--	--	150
United Kingdom	12,600	--	--	51	13	64
Venezuela	4,250	--	--	--	--	--
Total	541,000	19,000	44,700	8,230	6,750	59,700

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ June data were not available at the time of publication.

Source: U.S. Census Bureau.